

Remarks

Claims 1-9 and 29-32 are currently under consideration in the above-identified application. In order to be fully responsive to the outstanding Office Action and to place the pending claims in condition for allowance, Applicants have cancelled Claims 11-28 without prejudice or disclaimer drawn to a nonelected invention. Applicants reserve the right to pursue the subject matter of the cancelled claims in a continuing application.

35 U.S.C. § 112

Claim 30 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for use of the term "hydrophilic". The Office Action contends that "hydrophilic" is a relative term, that the specification does not provide a standard for determining the degree of hydrophilicity, and that one of ordinary skill in the art would not be apprised of the scope of the invention. In response, Applicant respectfully traverses this rejection and respectfully requests reconsideration based on the Applicants' comments.

The specification provides a definition for "hydrophilic" on page 12, lines 18-20, and also provides examples of hydrophilic monomers, namely, acrylamide and vinylpyrrolidone. One of skill in the art, given these examples of hydrophilic monomers as standards, would be reasonably informed of what the term "hydrophilic" defines. "The fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. *Seattle Box Co., v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984)."

In light of the above comments, Applicants submit that this rejection has been overcome and respectfully requests its withdrawal.

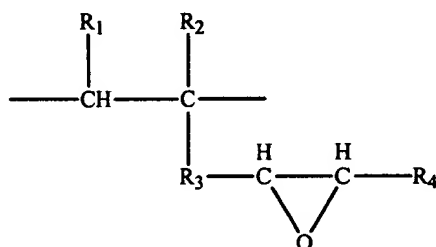
35 U.S.C. § 102

Claims 1-3, 5-8, 29, and 30 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by, or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over, U.S. Patent No. 4,332,694 to Kalal et al. (referred to herein as "Kalal"). Applicants respectfully traverse this rejection and argue that the pending claims are neither anticipated by, or obvious over, Kalal.

Claim 1 of the present invention recites a reagent composition comprising a copolymer formed by reacting one or more monomers having pendant epoxy groups with one or more diluent monomers or polymers. The diluent monomers or polymers are selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers.

Claim 29 of the present invention recites a reagent composition comprising a copolymer formed by reacting one or more monomers having pendant epoxy groups in an amount of 5 to 25 mole percent based on the weight of the copolymer; one or more diluent monomers or polymers, wherein the diluent monomers or polymers are selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers; and one or more monomers having a photoreactive group in an amount of 0.1 to 5 mole percent based on the weight of the copolymer.

In contrast, Kalal discloses a three dimensional carrier comprising an inorganic porous material and an unextractably sorbed reactive polymer of the general formula:



where R_1 , R_2 , and R_4 are hydrogen, an alkyl with 1 to 5 carbons, or an aryl. R_3 is the group $-\text{COO}-(\text{CH}_2)_n-$. Kalal discloses a polymer prepared from a monomer containing a pendant epoxy group.

However, Kalal does not teach or suggest that the polymer is a copolymer that includes diluent monomers or polymers selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers. The Office Action contends that Kalal discloses epoxide containing (hydrophilic) polymers that anticipate a composition within the scope of present claims 1 and 29. The Office Action has referenced portions of Kalal (i.e., column 2, lines 1-18 and 51-65; the Examples; and Claim 8), allegedly relevant to these claims. However, Applicant has reviewed Kalal in its entirety and has not found any teaching or suggestion that the polymer composed of epoxide-containing monomers, as taught by Kalal, includes the diluent monomers

as recited in current Claims 1 and 29. Moreover, the Kalal does not teach the percent ranges of epoxy groups and photoreactive groups as recited in Claim 29.

The Office Action has argued that the Kalal polymers comprise epoxy monomers and acrylic/vinyl monomers within the scope of the presently claimed invention. Applicant respectfully disagrees with this assessment as the diluent monomers recited in Claims 1 and 29, and supported in the specification at page 18, line 21 to page 19, line 2, are not taught or suggested by Kalal.

Further, it is noted that the Applicants are currently not arguing the patentability of Claims 1 and 29 based on any product-by-process or intended use limitations as suggested in the outstanding Office Action.

Kalal does not teach all the claim limitations of either Claim 1 or 29 and therefore does not anticipate these claims. In addition, all the requirement for a *prima facie* case of obviousness rejection have not been established as Kalal does not teach or suggest all the limitations of either Claim 1 or 29. Accordingly, Claims 1, 29, and all the claims that depend therefrom are neither anticipated or obvious over Kalal. Applicants respectfully request withdrawal of the anticipation and obviousness rejections based on Kalal.

35 U.S.C. § 103(a)

Kalal and Shi

Claims 1-3, 5-8, 29, and 30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kalal and Shi et al. (U.S. Patent No. 5,919,626; herein referred to as "Shi"). The Office Action contends that one would be motivated to modify Kalal to utilize unmodified nucleic acids as target compounds and silanized glass for the benefits obtained therefrom as taught by the Shi reference. Applicants respectfully traverse this rejection and argue that the pending claims are not obvious over Kalal and Shi, taken alone or in combination.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143.

The teachings of Kalal have been described above and are applied in the Applicants' response to this rejection.

Shi discloses a method for immobilizing a nucleic acid molecule to a solid substrate. A silane compound is applied to a solid substrate and cured. The silane coated substrate is then coupled with unmodified nucleic acid molecules having either a terminal 3' OH or a terminal 5' OH. The silane can be 3-glycidoxy propyl-trimethoxysilane.

Shi does not cure the deficiencies noted above for Kalal. Shi and Kalal, taken alone or in combination, do not teach or suggest a copolymer that includes monomers having pendant epoxy groups and one or more diluent monomers or polymers selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers. Neither Shi nor Kalal teaches or suggests a diluent monomer or polymer in a copolymer including monomers having pendant epoxy groups.

Therefore, Kalal and Shi, taken alone or in combination, do not teach or suggest all the limitations of either Claim 1 or 29. Accordingly, Claims 1, 29, and all the claims that depend therefrom are not obvious over Kalal and Shi. Applicants respectfully request withdrawal of the obviousness rejections based on Kalal and Shi.

Swanson and Shi

Claims 1, 5-9, and 29-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Swanson et al. (U.S. Pat. No. 5,942,555; herein "Swanson") and Shi. The Office Action contends that it would have been obvious to modify the Swanson reagent and method of attaching a target (e.g. oligonucleotide) by modifying the Swanson photopolymer composition to substitute epoxy groups (or epoxy and SH groups) for the SH groups disclosed in Swanson for use in applying to silanized surfaces (e.g. glass) in order to realize the benefits therefrom such as the attachment of targets (e.g. oligonucleotides) without the need to modify the target (e.g. oligonucleotide) as taught by the Shi. Applicants respectfully traverse this rejection and argue that the pending claims are not obvious over Swanson and Shi, taken alone or in combination.

The requirements for a *prima facie* case of obviousness rejection have been outlined above. The teachings of Shi have been described above and are applied in the Applicants' response to this rejection.

Swanson discloses a photoactivatable reagent having one or more photoactivatable groups and one or more sulfhydryl (or other chain transfer) groups. The reagent can be used to initiate the polymerization of ethylenically unsaturated monomers. The photoactivatable reagent is present at the end.

Swanson does not cure the deficiencies noted above for Shi. Swanson and Shi, taken alone or in combination, do not teach or suggest a copolymer that includes monomers having pendant epoxy groups and one or more diluent monomers or polymers selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers.

Therefore, Swanson and Shi, taken alone or in combination, do not teach or suggest all the limitations of either Claim 1 or 29. Accordingly, Claims 1, 29, and all the claims that depend therefrom are not obvious over Swanson and Shi. Applicants respectfully request withdrawal of the obviousness rejections based on Swanson and Shi.

Swanson, Shi, and Kalal

Claims 1-9 and 29-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Swanson and Shi as applied to claims 1, 5-9 and 29-32 above, and further in view of Kalal. The Office Action contends that it would have been obvious to employ the use of known monomers for making epoxylated resins as taught by Kalal in the combined teaching of the Shi and Swanson references with a reasonable expectation of success. Applicants respectfully traverse this rejection and argue that the pending claims are not obvious over Swanson, Shi, and Kalal, taken alone or in combination.

The requirements for a *prima facie* case of obviousness rejection have been outlined above. The teachings of Swanson, Shi, and Kalal have also been described above and are applied in the Applicants' response to this rejection.

With regard to Claim 1, Swanson, Shi, and Kalal, taken alone or individually, do not suggest preparing a polymer containing monomers having pendant epoxy groups and diluent monomers or polymers selected from the group consisting of acrylics, vinyl, nylons, polyurethanes, and polyethers.

With regard to Claim 29, Swanson, Shi, and Kalal, taken alone or individually, do not teach or suggest a copolymer having pendant epoxy groups in an amount of 5 to 25 mole percent based on the weight of the copolymer; one or more diluent monomers or polymers, wherein the

diluent monomers or polymers are selected from the group consisting of acrylics, vinyls, nylons, polyurethanes, and polyethers; and one or more monomers having a photoreactive group in an amount of 0.1 to 5 mole percent based on the weight of the copolymer.

There is no suggestion to modify or combine the teachings of Swanson, Shi, and Kalal to provide a polymer having all the limitations of claim 1. Therefore, all the requirements for a *prima facie* case of obviousness rejection have not been met. Accordingly, Claim 1 and all the claims that depend therefrom are not obvious over Swanson, Shi, and Kalal. Also, the teachings of Swanson, Shi, and Kalal, taken alone or in combination, do not provide a copolymer having all the limitations of claim 29. Accordingly, Claim 29 and all the claims that depend therefrom are not obvious over Swanson, Shi, and Kalal.

In light of the above, Applicants respectfully request removal of the obviousness rejection based on the combination of Swanson, Shi, and Kalal.

Conclusion

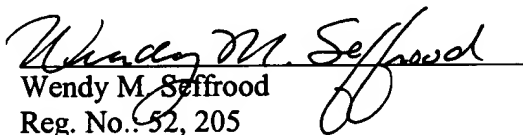
Applicants submit that all the pending claims 1-9 and 29-32 are in proper form for allowance. Applicants respectfully request a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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8/30/02


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